T 143/987

Preprint from the 1987

BUREAU OF MINES MINERALS YEARBOOK

Talc and Pyrophyllite

UNITED STATES DEPARTMENT OF THE INTERIOR

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This publication is a chapter from the current Bureau of Mines Minerals Yearbook, comprising *Volume I, Metals and Minerals; Volume II, Area Reports: Domestic; Volume III, Area Reports: International.* The separate volumes of the Yearbook are sold by the Superintendent of Documents, Washington, D.C. 20402.

Talc and Pyrophyllite

By Robert L. Virta[1]

Domestic production of talc and pyrophyllite increased 4% from that of 1986. Sales of crude and processed talc and pyrophyllite decreased slightly in tonnage and increased slightly in value. Imports for consumption increased slightly. Exports increased 36% in tonnage and 29% in value.

Domestic Data Coverage.—Domestic production and sales data for talc and pyrophyllite are developed by the Bureau of Mines from a voluntary survey of U.S. mines and mills. Of the 82 mines and mills to which a survey request was sent, 56 responded, representing 68% of the U.S. production data shown in table 1. Production for the 26 nonrespondents was estimated using reported prior year production levels adjusted by trends in employment and other guidelines.

Table 1.—Salient talc and pyrophyllite statistics

(Thousand short tons and thousand dollars)

	1983	1984	1985	1986	1987
United States:					
Mine production, crude:					
Talc	980	1,042	1,188	1,219	1,258
Pyrophyllite	87	85	81	83	92
Total[1]	1,066	1,127	1,269	1,302	1,349
Value:					
Talc	$18,998	$21,755	$27,768	$29,687	$27,178
Pyrophyllite	1,282	1,412	1,420	1,540	1,607
Total	20,280	23,167	29,188	31,227	28,785
Sold by producers, crude and processed:					
Talc	1,038	1,101	1,067	1,070	1,057
Pyrophyllite	125	97	81	83	90
Total	1,163	1,198	1,148	1,153	1,147
Value:					
Talc	$104,739	$112,515	$114,542	$111,924	$112,716
Pyrophyllite	4,057	3,578	3,273	3,366	3,712
Total[1]	108,796	116,093	117,815	115,290	[e]116,429
Exports[2] (talc)	218	256	237	234	318
Value	$12,916	$16,162	$14,282	$16,302	$21,040
Imports for consumption[3] (talc)	44	45	47	52	53
Value	$7,691	$9,156	$9,532	$8,715	$10,348
Consumption, apparent[4]	989	1,009	1,079	1,120	1,084
World: Production	7,781	[r]8,303	[r]8,423	[p]8,256	[e]8,310

[e]Estimated. [p]Preliminary. [r]Revised.

[1]Data may not add to total shown because of independent rounding.

[2]Excludes powders—talcum (in package), face, and compact.

[3]Does not include imported pyrophyllite.

[4]Production, plus imports, minus exports, plus adjustments in Government and industry stock changes.

Legislation and Government Programs.—The Occupational Safety and Health Administration (OSHA) extended through July 21, 1988, an administrative stay on its 1986 regulation governing worker exposure to the nonasbestiform varieties of actinolite, anthophyllite, and tremolite. During the stay, OSHA continued to analyze the impact of using the asbestos standard to regulate the nonasbestiform varieties of the minerals.[2]

U.S. import duties on talc minerals from most favored nations were crude and unground, 0.02 cent per pound; ground, washed, powdered, and/or pulverized, 2.4% ad valorem; cut, sawed, or in blanks, crayons, cubes, disks, or other forms, free; and other not specifically provided for, 4.8% ad valorem.

The stockpile inventories of 1,081 short tons for block or lump talc and 1,809 tons for ground talc at yearend were unchanged from those of 1986.

DOMESTIC PRODUCTION

Talc.—U.S. mine production of crude talc increased 3% in tonnage and decreased 8% in value. Talc and soapstone were produced at 28 mines in 10 States. Mines that operated in Montana, New York, Texas, and Vermont accounted for 95% of domestic talc production. Montana led all States in the tonnage and value of talc produced.

The largest domestic producers of talc, listed alphabetically, are Cyprus Industrial Minerals Co.; Dal-Tile (Texas Talc Co.) Gouverneur Talc Co., a subsidiary of R. T. Vanderbilt Co. Inc.; Pfizer Inc., Minerals, Pigments and Metals Div.; Vermont Talc Co.; and Windsor Minerals Inc.

Vermont Talc opened a mine near Troy, VT, to supply talc to its flotation mill at Johnson, VT.

Cyprus completed developmental work and began mining talc from a deposit near Alpine, AL. Talc from the deposit will be processed at the Cyprus mill facilities in Alpine.

Pyrophyllite.—Pyrophyllite was produced by four companies operating six mines in California and North Carolina. Production increased 11% over that of 1986.

Table 2.—Crude talc and pyrophyllite produced in the United States, by State

(Thousand short tons and thousand dollars)

State	1986		1987	
	Quantity	Value	Quantity	Value
California	64	1,528	W	W
Georgia (talc)	9	61	20	286
Montana	W	W	386	12,320
North Carolina	83	1,552	W	W
Texas (talc)	283	6,456	255	4,380
Other[1] (talc)	863	21,630	688	11,799
Total	1,302	31,227	1,349	28,785

W Withheld to avoid disclosing company proprietary data; included with "Other."
[1]Includes Arkansas, New York, Oregon, Vermont, Virginia (1987).

CONSUMPTION AND USES

Apparent domestic consumption of crude and processed talc and pyrophyllite decreased 3%. Sales of talc and pyrophyllite decreased slightly in tonnage and increased slightly in value.

End-use distribution of ground talc was ceramics, 33%; paint, 15%; paper, 14%; roofing, 12%; plastics, 8%; cosmetics, 6%; and insecticide, refractory, rubber, and other, 12%.

The largest portion, 61%, of domestically produced ground pyrophyllite was used in ceramics, 16% was used in refractories, 9% in insecticides, and 14% in paint, plastic, roofing, rubber, and other.

A survey of the European paper industry indicated that talc consumption was approximately 550,000 tons per year. Over 75% of the talc consumed was used as paper filler. Slightly less than 8% was used for pitch-control and 8% was used as a coating pigment. Talc's importance as a pitch control agent was reduced through the use of chemical additives. The major consuming European countries were Austria, Finland, France, Italy, and Spain.[3]

A survey of the talc industry in Europe indicated that changes in the general economy, overcapacities at processing plants, and loss of markets to other minerals resulted in more competition within the talc industry. Growth within the pulp and paper industry was expected to slow because of increased use of calcium carbonate as a paper filler. With increasing restrictions on the use of chemicals, new papermaking machines, and increased waste paper recycling, the market for talc as a pitch control agent had the greatest potential for growth. Growth within the roofing industry was not ex-

pected because of competition from limestone, sand, slate, and antistick polyolefin films, and the increasing use of single-ply roofing applications. Talc consumption by the ceramics industry was expected to increase because of demand for earthenware, electroceramics, floor tiles, and sanitary ware. Consumption of talc by the plastics industry was expected to increase 7% to 10% because of the demand for talc-filled polypropylene.[4]

Table 3.—End uses for ground talc and pyrophyllite

(Thousand short tons)

Use	1986			1987		
	Talc	Pyrophyllite	Total[1]	Talc	Pyrophyllite	Total
Ceramics	343	64	407	313	83	396
Cosmetics[2]	46	3	49	60	--	60
Insecticides	6	13	18	(3)	12	12
Paint	168	2	170	138	2	140
Paper	127	--	127	127	--	127
Plastics	69	1	69	79	1	80
Refractories	3	20	22	2	21	23
Roofing	106	2	108	112	1	113
Rubber	25	(3)	25	19	(3)	19
Other[4]	90	13	103	88	14	102
Total[1]	983	116	1,099	938	135	1,073

[1]Data may not add to totals shown because of independent rounding.
[2]Incomplete data. Some cosmetic talc known to be included with "Other."
[3]Less than 1/2 unit.
[4]Includes art sculpture, asphalt filler and coatings, crayons, floor tile, foundry facings, rice polishing, stucco, and other uses not specified.

PRICES

Talc prices varied depending on the quality, and on the degree and method of processing.

Prices, quoted by the Engineering and Mining Journal, December 1987, per short ton of domestic ground talc, in carload lots, f.o.b. mine or mill, including containers follow:

New Jersey:	
Mineral pulp, bags extra	$18.50-$20.50
Vermont:	
98% through 325 mesh, bulk	70.00
99.99% through 325 mesh, bags:	
Dry processed	147.00
Water beneficiated	213.00-228.00
New York:	
96% through 200 mesh	67.00- 75.00
98% to 99.25% through 325 mesh	83.00-100.00
100% through 325 mesh, fluid-energy ground	165.00
California:	
Standard	130.00
Fractionated	37.00- 71.00
Micronized	150.00-220.00
Cosmetic steatite	44.00- 65.00
Georgia:	
98% through 200 mesh	50.00
99% through 325 mesh	60.00
100% through 325 mesh, fluid-energy ground	100.00

Approximate equivalents, in dollars per short ton, of price ranges quoted in Industrial Minerals (London), December 1987, for talc, c.i.f. main European ports, were as follows:

Norwegian:	
Ground (ex store)	$162-$180
Micronized (ex store)	207- 288
French, fine-ground	216- 342
Italian, cosmetic-grade	315
Chinese, normal (ex store):	
UK 200 mesh	254
UK 325 mesh	265
New York, paint, minimum 20-ton lot	175

FOREIGN TRADE

Talc exports increased 36% in tonnage and 29% in value. Prices ranged from $12 to $596 per ton, averaging $66 per ton.

Table 4.—U.S. exports of talc[1]

(Thousand short tons and thousand dollars)

Year	Belgium-Luxembourg		Canada[2]		Japan		Mexico		Other[3]		Total	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
1983	1	55	74	4,629	16	1,077	86	2,805	41	4,350	218	12,916
1984	11	722	76	5,265	22	1,518	107	3,696	40	4,961	256	16,162
1985	6	373	81	4,864	18	1,422	108	4,492	24	3,131	237	14,282
1986	15	1,273	59	4,411	22	1,707	112	4,464	27	4,447	[4]234	16,302
1987	30	2,482	61	5,090	26	2,405	149	5,614	52	5,538	318	[4]21,040

[1]Excludes powders—talcum (in package), face, and compact.
[2]Probably includes shipments in transit through Canadian ports.
[3]Includes 48 countries in 1987.
[4]Data do not add to total shown because of independent rounding.

Table 5.—U.S. imports for consumption of talc, by country

Country	Crude and unground		Ground, washed, powdered, or pulverized		Cut and sawed		Talc, n.s.p.f.	Total unmanufactured[1]	
	Quantity (short tons)	Value (thousands)	Quantity (short tons)	Value (thousands)	Quantity (short tons)	Value (thousands)	Value (thousands)	Quantity (short tons)	Value (thousands)
1985	10,772	$1,350	33,234	$5,140	2,889	$2,097	$945	46,895	$9,532
1986:									
Australia	9,353	569	--	--	--	--	--	9,353	569
Brazil	--	--	112	39	750	334	50	862	423
Canada	54	4	37,307	4,949	116	153	46	37,475	5,152
China	418	25	--	--	485	438	237	903	699
Italy	6	2	141	37	--	--	5	147	44
Korea, Republic of	--	50	1,077	240	53	26	3	1,130	319
Other[2]	256	66	1,616	685	230	304	454	2,102	1,509
Total[1]	10,086	715	40,253	5,951	1,634	1,254	795	51,973	8,715
1987:									
Australia	1,450	87	--	--	--	--	--	1,450	87
Brazil	--	--	277	42	398	151	12	675	205
Canada	--	--	38,729	5,362	108	128	65	38,837	5,555
China	--	--	--	--	386	288	275	386	563
Italy	216	24	85	24	1,123	1,090	--	1,424	1,138
Korea, Republic of	--	--	917	252	34	19	--	951	271
Other[3]	8,428	805	777	431	288	341	952	9,503	2,529
Total[1]	10,104	916	40,784	6,112	2,337	2,017	1,304	53,225	10,348

[1]Data may not add to totals shown because of independent rounding.
[2]Includes 17 countries.
[3]Includes 21 countries.

Source: Bureau of the Census.

WORLD REVIEW

The United States remained the world's largest talc producer, and Japan remained the largest pyrophyllite producer. China, Japan, and the United States accounted for 46% of the world's talc and pyrophyllite production.

Australia.—Thames Mining NL opened its Mount Seabrook Mine in Western Australia following completion of mine planning and plant design studies. The company will produce cosmetic and industrial-grade talc.[5]

Table 6.—Talc and pyrophyllite: World production, by country[1]

(Short tons)

Country[2]	1983	1984	1985	1986[p]	1987[e]
Argentina (talc, steatite, pyrophyllite)	32,729	30,629	23,366	r e27,900	27,900
Australia	194,644	r205,867	153,652	207,287	193,000
Austria (unground talc)	134,623	147,722	144,903	146,959	143,000
Brazil (talc and pyrophyllite)[3]	437,025	455,637	426,647	462,742	468,500
Burma	141	100	141	62	66
Canada (shipments) (talc, pyrophyllite, soapstone)	106,924	138,891	139,993	135,584	155,000
Chile	702	465	1,432	2,488	2,200
China[e]	1,050,000	1,050,000	1,100,000	1,100,000	1,100,000
Colombia	7,318	7,479	9,492	20,393	20,400
Egypt	4,981	13,463	8,488	9,700	9,900
Finland	351,009	360,976	351,138	313,253	364,000
France (ground talc)	315,812	322,315	342,705	347,189	346,000
Germany, Federal Republic of (marketable)	15,779	19,030	22,935	24,123	23,100
Greece (steatite)	2,388	1,887	1,961	r2,060	2,050
Hungary[e]	18,700	19,300	18,700	17,700	18,500
India (pyrophyllite and steatite)	389,162	460,473	422,111	436,526	457,500
Italy (talc and steatite)	175,226	157,329	142,875	166,876	168,400
Japan[e]	1,615,791	1,652,393	1,580,978	1,470,441	1,280,000
Korea, North[e]	185,000	185,000	185,000	185,000	185,000
Korea, Republic of (talc and pyrophyllite)	696,910	935,475	1,027,880	879,291	880,000
Mexico	12,161	9,811	32,959	r22,000	27,500
Nepal[3]	10,825	8,372	6,630	9,678	9,900
Norway[e]	110,000	r124,561	r110,000	r110,000	110,000
Pakistan (pyrophyllite)	17,568	17,161	22,248	25,376	27,500
Paraguay	132	165	r132	r132	132
Peru (talc and pyrophyllite)	5,767	10,183	551	r e1,200	1,100
Philippines	968	1,022	396	e1,100	1,100
Portugal	6,018	6,838	3,976	4,565	4,400
Romania[e]	66,000	72,000	72,000	72,000	72,000
South Africa, Republic of[e]	12,337	15,886	15,925	14,602	14,600
Spain (steatite)	76,574	79,628	97,659	r1,476	88,000
Sweden	23,210	19,712	15,432	2,205	2,200
Taiwan	29,821	26,591	19,357	23,757	22,000
Thailand (talc and pyrophyllite)	22,209	31,393	47,926	43,046	44,000
U.S.S.R.[e]	560,000	570,000	570,000	570,000	580,000
United Kingdom	17,600	21,000	22,646	13,250	13,200
United States (talc and pyrophyllite)	1,066,400	1,127,421	1,288,750	1,392,179	e1,349,440
Uruguay	755	1,828	e1,700	e1,700	1,700
Zambia	1,447	486	10,504	293	290
Zimbabwe	807	314	482	879	880
Total	7,781,100	r8,292,632	8,432,094	8,255,736	8,310,458

[e]Estimated. [p]Preliminary. [r]Revised.

[1]Table includes data available through May 27, 1988.

[2]In addition to the countries listed, Czechoslovakia produces talc, but available information is inadequate to make reliable estimates of output levels.

[3]Total of beneficiated and salable direct-shipping production of talc and pyrophyllite.

[4]Includes talc, pyrophyllite, and pyrophyllite clay.

[5]Data based on Nepalese fiscal year beginning mid-July of year stated.

[6]Reported figure.

[7]Includes talc and wonderstone.

Western Mining Corp. Ltd. assumed complete control of Three Springs Talc Pty. Ltd. Three Springs Talc operated one of the world's largest talc mines. The talc was used in ceramics, paint, paper, and plastics.[6]

Canada.—Carey Canada Inc. discovered a large, high-grade talc deposit near East Boughton, Quebec. The deposit contains 78% to 80% talc. Mine reserves were estimated to be 8.8 million tons. The company planned additional studies of the deposit to determine its commercial potential.[7]

China.—A deposit estimated to contain 18 million tons of pyrophyllite was discovered in the Fujian Province.[8]

Korea, Republic of.—The Department of Energy and Resources discovered a talc deposit near Kongju. Reserves were estimated to be 10 million tons.[9]

United Kingdom.—Shetland Talc Ltd., jointly owned by Dalriada Mineral Ventures Ltd. and Anglo-European Minerals Ltd., continued exploratory work on a talc-magnesite deposit in the Shetland Islands. Samples were collected and tested in a pilot plant operation.[10]

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[1]Physical scientist, Branch of Industrial Minerals.

[2]Federal Register. Occupational Safety and Health Administration. Occupational Exposure to Asbestos, Tremolite, Anthophyllite, and Actinolite. V. 52, No. 83, Apr. 30, 1987, pp. 15722-15723.

[3]Benbow, J. European Paper. Ind. Miner. (London), No. 243, Dec. 1987, pp. 73-89.

[4]Schober, W. Talc in Europe. Ind. Miner. (London), No. 237, June 1987, pp. 40-51.

[5]Mining Journal (London). More Talc From Thames. V. 309, No. 7946, Dec. 4, 1987, p. 458.

[6]Industrial Minerals (London). Three Springs Talc Takeover. No. 231, Jan. 1987, p. 9.

[7]Rock Products. Large Talc Deposit Found in Canada. V. 90, No. 8, Aug. 1987, p. 16.

[8]Industrial Minerals (London). Fujian Pyrophyllite Discovery. No. 239, Aug. 1987, p. 83.

[9]———. South Korean Talc Deposits. No. 239, Aug. 1987, p. 83.

[10]———. Talc Development in the Shetlands. No. 236, May 1987, p. 15.

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